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09/785,044	02/14/2001	Edwin C. Iliff	HEWAYS.015A6	4724
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SUTTER SWANTZ PC LLO 14301 FNB PARKWAY SUITE 220 OMAHA, NE 68154				CHANNAVAJJALA, SRIRAMA T
ART UNIT		PAPER NUMBER		
2157				
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			04/30/2013	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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srs@suiter.com

<b>Office Action Summary</b>	<b>Application No.</b> 09/785,044	<b>Applicant(s)</b> ILIFF, EDWIN C.	
	<b>Examiner</b> SRIRAMA CHANNAVAJJALA	<b>Art Unit</b> 2157	<b>AIA (First Inventor to File) Status</b> No
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>			
<b>Period for Reply</b>			
<p>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.</p> <ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>			
<b>Status</b>			
<p>1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>23 May 2013</u>.  <input type="checkbox"/> A declaration(s)/affidavit(s) under <b>37 CFR 1.130(b)</b> was/were filed on _____.</p>			
<p>2a) <input type="checkbox"/> This action is <b>FINAL</b>.      2b) <input checked="" type="checkbox"/> This action is non-final.</p>			
<p>3) <input type="checkbox"/> An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.</p>			
<p>4) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i>, 1935 C.D. 11, 453 O.G. 213.</p>			
<b>Disposition of Claims</b>			
<p>5) <input checked="" type="checkbox"/> Claim(s) <u>1,3-13,15-17,19-27 and 29-38</u> is/are pending in the application.  5a) Of the above claim(s) _____ is/are withdrawn from consideration.</p>			
<p>6) <input type="checkbox"/> Claim(s) _____ is/are allowed.</p>			
<p>7) <input checked="" type="checkbox"/> Claim(s) <u>1,3-13,15-17,19-27 and 29-38</u> is/are rejected.</p>			
<p>8) <input type="checkbox"/> Claim(s) _____ is/are objected to.</p>			
<p>9) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.</p>			
<p>* If any claims have been determined <u>allowable</u>, you may be eligible to benefit from the <b>Patent Prosecution Highway</b> program at a participating intellectual property office for the corresponding application. For more information, please see <a href="http://www.uspto.gov/patents/init_events/pph/index.jsp">http://www.uspto.gov/patents/init_events/pph/index.jsp</a> or send an inquiry to <a href="mailto:PPHfeedback@uspto.gov">PPHfeedback@uspto.gov</a>.</p>			
<b>Application Papers</b>			
<p>10) <input type="checkbox"/> The specification is objected to by the Examiner.</p>			
<p>11) <input checked="" type="checkbox"/> The drawing(s) filed on <u>14 February 2001</u> is/are: a) <input checked="" type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner.  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).</p>			
<b>Priority under 35 U.S.C. § 119</b>			
<p>12) <input type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).</p>			
<b>Certified copies:</b>			
<p>a) <input type="checkbox"/> All    b) <input type="checkbox"/> Some *    c) <input type="checkbox"/> None of the:  1. <input type="checkbox"/> Certified copies of the priority documents have been received.  2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____.  3. <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</p>			
<p>* See the attached detailed Office action for a list of the certified copies not received.</p>			
<b>Interim copies:</b>			
<p>a) <input type="checkbox"/> All    b) <input type="checkbox"/> Some    c) <input type="checkbox"/> None of the: Interim copies of the priority documents have been received.</p>			
<b>Attachment(s)</b>			
<p>1) <input type="checkbox"/> Notice of References Cited (PTO-892)</p>		<p>3) <input type="checkbox"/> Interview Summary (PTO-413)  Paper No(s)/Mail Date. _____.</p>	
<p>2) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)  Paper No(s)/Mail Date _____.  </p>		<p>4) <input type="checkbox"/> Other: _____.</p>	

***DETAILED ACTION***

***Response to RCE-3***

1. Claims **1,3-15,15-17,19-27,29-38,40-42,44-56** are pending in this application.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114 filed on 3/23/2009. Applicant's submission filed on 5/23/2012 has been entered
3. Examiner acknowledges applicant response filed on 12/14/2011.
4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114 filed on 3/23/2009. Applicant's submission filed on 7/25/2011 has been entered
5. Examiner acknowledges applicants' amended claims 1,6,7,9, 11 filed on 3/22/2011.
6. ***“Decision on Appeal” mailed on 3/23/2010.***
7. ***Decision on request for rehearing mailed on 8/11/2010***
8. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114 filed on 3/23/2009. Applicant's submission filed on 9/29/2010 has been entered

9. Examiner acknowledges applicant **amended claims 1,6,9,11 and added new claims 53-56** filed on 9/29/2010.

***Drawings***

10. The Drawings filed on 2/14/2001 are acceptable for examination purpose

***Priority***

11. Acknowledgment is made of applicant's claim for domestic priority application # 60182176, filed 02/14/2000 under 35 U.S.C. 119(e).

***Information Disclosure Statement***

12. The information disclosure statement filed on 11/2/2010,6/21/2010;3/12/2010;11/19/2009;6/25/2009;6/15/2009;1/16/2009 is in compliance with the provisions of 37 CFR 1.97, and has been considered and a copy was enclosed with previous Office Action

13. The information disclosure statement filed on 5/9/2008 is in compliance with the provisions of 37 CFR 1.97, and has been considered and a copy was enclosed with previous Office Action.

14. Applicant is reminded that an applicant's duty of disclosure of material and information is not satisfied by presenting a patent examiner with 'a mountain of large information disclosure (material) from which he/she is presumed to have been able, with his/her expertise. Applicant is reminded that an applicant's duty of disclosure of material and with adequate time, to have found the critical (material). It ignores the real world conditions under which examiners work. Rohm & Haas Co. v. Crystal Chemical Co., 722 F.2d 1556 (220 USPQ 289) (Fed. Cir. 1983), cert denied 469 U.S. 851 (1984). (Emphasis in original). ***Patent applicant has a duty not just to disclose pertinent prior art references but to make a disclosure in such way as not to 'bury' it within other disclosures of less relevant prior art***; See Golden Valley Microwave Foods Inc. V Weaver Popcorn Co. Inc, 24 USPQZd 1801 (N.D. Ind. 1992)., Molins PLC v. Textron Inc., 26 USPQZd 1889, at 1889 (D.Del. 1992)\*, Penn Yan Boats, Inc. F. Sea Lark 8oals, Inc et al. 175 USPQ 260, at 272 (S.D.FI. 1972).

Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See Penn Yan Boats, Inc. v. Sea Lark Boats, Inc., 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), aff'd, 479 F.2d 1338, 178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. Molins PLC v. Textron Inc., 48 F.3d 1172, 33 USPQZd 1823 (Fed. Cir. 1995).

Please note that it is the applicant's duty to particularly point out any **highly**

relevance material amongst the references cited in the IDS filed on 9/8/2008.

The examiner under the condition noted above performed a cursory review of the submitted references.

***35 USC § 101***

15. In view of applicant's amendment to the claims 1,6,9,11, the rejection under 35 USC 101 as set forth in the previous office action is hereby withdrawn.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. ***Claims 6-9,20-27,29-38,40-42,49-51,54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iliff (U.S. Patent No. 5,868,669) in view of Braun et al (hereafter Braun) (U.S. Patent No. 6050940), based on provisional application No # 60/019,962 filed on Jun 17,1996.***

17. With respect to claim 6, Iliff teaches "an object based automated diagnostic system comprising, a computing device and computer code, configured to execute on the computing device, the computer code comprising, a server, and non-transitory

computer executable program code configured to execute on the server, wherein the server is configured to [col 4, line 37-47], Iliff supports computer having input and output, algorithm processor executing the instruction in the computer; computing device corresponds to Iliff's computer comprising a plurality of diagnostic objects which interact with the executable program code [col 4, line 37-47] to receive input from a user and , as a result of said interaction [col 4, line 62-67, col 5, line 36-45], Iliff specifically supports both input and output device;

determine a diagnosis of a patient, (MDATA system supports object oriented language such as C++ related to patient's medical records and/objects, further Encapsulation is the process of combining data and functions into a single unit called class is integral part of C++ programming because Iliff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67) wherein the objects include at least two diagnostic objects comprising:

a disease object processing data indicative of an abnormal health state or disease (col 20, line 1-5, col 36, line 50-63), abnormal health state or disease corresponds to Iliff's disease object[s];

a symptom object, processing data indicative of a patient sign, complaint, finding, or test results (col 39, line 35-60), Iliff specifically teaches MDATA system processing information related to patient's diagnostic or symptom screening for example as detailed in col 39, line 35-60;

a valuator object, processing data indicative of a value of the symptom of the patient, a question object, processing data indicative of questions to ask the patient

specific to a specific symptom of the patient (col 30, line 35-60, col 40, line 7-12), Iliff specifically teaches MDATA system specifically processing specific questions related to specific headaches for example “migraine screening”,

a node object, processing data indicative of a single well-defined question to the patient and a candidate object processing data indicative of candidate disease for diagnosis of the patient (i.e., diagnoses and symptoms, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12, lines 38- 45 in col. 21, and line 24 in col. 35 thru line 49 in col. 42, the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object),

wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects (i.e., a directed graph of a node map, line 64 in col. 14.thru line 24 in col. 15, and process of initial screening questions to migraine screening questions and to migraine confirmation questions, lines 25-44 in col. 35, lines 61-67 in col. 39, and lines 18-25 in col. 40),

Ilif teaches assign a new name for a symptom object that us reused (col 12, line 32-35, col 21, line 46-51,col 22, line 50-55, col 23, line 288-33), Ilif specifically teaches defining data structure of medical history objects defining unique codes that are reused in processing past and present medical history database; further it is noted that Iliff strongly supports “new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35)

Iliff teaches at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation (i.e., a directed graph of a node map in which anode directly invokes another node, line 64 in col. 14 thru line 24 in col. 15; migraine object directly invokes migraine symptom/questions objects, lines 61-67 in col. 39).

Iliff discloses the claimed subject matter as discussed above except encapsulation of data, although it is noted that **encapsulation** is the process of combining data and functions into a single unit called class is integral part of C++ programming because Iliff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67. On the other hand, Braun et al. teaches “wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data” (Abstract, col 3, line 15-19, col 4, line 32-45, col 11, line 14-31), Braun directed to medical diagnosis system specifically real-time data collection, automated data analysis, data encoding, viewing and like i.e. supporting multiple functionalities, further allows data collection, encapsulation as detailed in col 11, line 14-31.

Therefore, based on Iliff in view of Braun, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of medical diagnosis data collection, analysis into the system of Iliff's medical diagnostic and treatment system in order to maintain the integrity of the overall data collection,

encoding, and analysis (Braun: Abstract), further allows supporting “distributed collection including remote monitoring application (col 12, line 35-38), furthermore allows users of Iliif to added programmed functionality which initiates new data collection or output, monitors data streams as new data arrives, produces new views of the data and like (Braun: col 11, line 53-57)

18. With respect to claim 7, Iliif teaches the objects include a plurality of disease objects and a plurality of symptom objects (i.e., diagnoses and symptoms, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12, lines 38-45 in col. 21, and line 24 in col. 35 thru line 49• in col. 42, the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object).

19. With respect to claim 8, Iliif teaches an engine object to coordinate the other objects (i.e., a node map, lines 1-7 in col. 15 and evaluation process 254 in fig. 6).

20. With respect to claim 9, Iliif teaches an object based automated diagnostic system comprising: a server; and non-transitory computer executable program code,, configured to execute on the server, wherein the server is configured to:: (col 4, line 37-47), Iliif supports computer having input and output, algorithm processor executing the instruction in the computer; computing device corresponds to Iliif's computer comprising:

“execute a plurality of diagnostic objects which interact to receive input from a user and, as a result of said interaction [col 4, line 62-67, col 5, line 36-45], IIiff specifically supports both input and output device;

determine a diagnosis of a patient ( col 13, line 6-10, MDATA system supports classification of “diseases” particularly creating and classifying diseases to advise the patients, further MDATA system supports object oriented language such as C++ related to patient’s medical records and/objects, because IIiff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67) wherein the diagnostic objects include at least a plurality of disease objects, each disease object processing data indicative of an abnormal health state or disease” (col 20, line 1-5, col 36, line 50-63 ), abnormal health state or disease corresponds to IIiff’s disease object[s];

execute a plurality of symptom objects, each symptom object processing data indicative of a patient sign, complaint, finding, or test result” (col 39, line 35-60), IIiff specifically teaches MDATA system processing information related to patient’s diagnostic or symptom screening for example as detailed in col 39, line 35-60; and

a plurality of valuator objects, each valuator object processing data indicative of a value of a symptom of the patient” (col 30, line 35-60, col 40, line 7-12), IIiff specifically teaches MDATA system specifically processing specific questions related to specific headaches for example “migraine screening”; and

IIif teaches assign a new name for a symptom object that us reused (col 12, line 32-35, col 21, line 46-51,col 22, line 50-55, col 23, line 288-33), IIif specifically teaches

defining data structure of medical history objects defining unique codes that are reused in processing past and present medical history database; further it is noted that Iliff strongly supports “new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35)

wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient (i.e., diagnosis, symptoms, and evaluation processes, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12, lines 38-45 in col. 21, lines 36-41 in col. 39, line 24 in col. 35 thru line 49 in col. 42, and lines 24-37 in col. 18; the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object; a directed graph of a node map in which a node directly invokes another node, line 64 in col. 14 thru line 24 in col. 15).

Prior art Iliff discloses the claimed subject matter as discussed above except encapsulation of data, although it is noted that **encapsulation** is the process of combining data and functions into a single unit called class is integral part of C++ programming because Iliff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67.

On the other hand, Braun et al. teaches “wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data” (Abstract, col 3, line 15-19, col 4, line 32-45, col 11, line 14-31), Braun directed to

medical diagnosis system specifically real-time data collection, automated data analysis, data encoding, viewing and like i.e. supporting multiple functionalities, further allows data collection, encapsulation as detailed in col 11, line 14-31.

Therefore, based on Iliff in view of Braun, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of medical diagnosis data collection, analysis into the system of Iliff's medical diagnostic and treatment system in order to maintain the integrity of the overall data collection, encoding, and analysis (Braun: Abstract), further allows supporting "distributed collection including remote monitoring application (col 12, line 35-38), furthermore allows users of Iliff to added programmed functionality which initiates new data collection or output, monitors data streams as new data arrives, produces new views of the data and like (Braun: col 11, line 53-57)

21. With respect to claim 20, Iliff teaches the objects include a disease object (i.e., migraine object, lines 53-60 in col. 39), a symptom object (i.e., headache, lines 53-60 in col. 39), a valuator object (i.e., evaluation process 254, lines 36-41 in col. 39), a question object (i.e., questions, lines 41-52 in col. 39), a node object (i.e., interface to a client 124 in fig. 4), and a candidate object (i.e., ranked lists, lines 12-35 in col. 39).

22. With respect to claim 21, Iliff teaches. the symptom object invokes the valuator object (i.e., the results of symptoms are evaluated, lines 53-60 in col. 39).

23. With respect to claim 22, Iliff teaches the valuator object invokes the question object (i.e., another screen .questions are invoked after the evaluation, line 53 in col. 39 thru line 12 in col. 40).

24. With respect to claim 23, Iliff teaches the question object invokes the node object (i.e., another screen questions are asked to the user, line 53 in col. 39 thru line 12 in col. 40).

25. With respect to claim 24, Iliff teaches a particular disease is associated with a plurality of disease objects corresponding to different phases of the particular disease (i.e., stages of illness, lines 31-42 in col. 1).

26. With respect to claim 25, Iliff teaches a particular disease is associated with a plurality of disease objects corresponding to different populations for the particular disease (lines 22-28 in col. 47).

27. With respect to claim 26, Iliff teaches a particular disease object is representative of a plurality of related diseases that share common symptoms (i.e., meningitis and brain tumor shares headache, lines 11-26 in col. 41).

28. With respect to claim 27, Iliff teaches the objects act independently of other objects and a particular object retains a record of its actions for future reference (lines 37-47 in col. 13 and lines 24-44 in col. 18).

29. Claim 28 (CANCELLED)

30. With respect to claim 29, Iliff teaches a particular disease object monitors the questions and answers of other disease objects (lines 11-26 in col. 41 and lines 43-46 in col. 40).

31. With respect to claim 30, Iliff teaches the engine object coordinates a plurality of concurrently operating disease objects by switching execution among the disease objects (i.e., excluding diseases from diagnostic consideration, lines 11-26 in col. 41 and lines 43-46 in col. 40).

32. The limitations of claim 31 are rejected in the analysis of claim 21 above, and the claim is rejected on that basis.

33. The limitations of claim 32 are rejected in the analysis of claim 20 above, and the claim is rejected on that basis.

34. The limitations of claim 33 are rejected in the analysis of claim 22 above, and the claim is rejected on that basis.

35. The limitations of claim 34 are rejected in the analysis of claim 23 above and the claim is rejected on that basis.

36. The limitations of Claim 35 are rejected in the analysis of claim 24 above and the claim is rejected on that basis.

37. The limitations of claim 36 are rejected in the analysis of claim 25 above and the claim is rejected on that basis.

38. The limitations of claim 37 are rejected in the analysis of claim 26 above and the claim is rejected on that basis.

39. The limitations of claim 38 are rejected in the analysis of claim 27 above and the claim is rejected on that basis.

40. The limitations of claim 40 are rejected in the analysis of claim 29 above and the claim is rejected on that basis.

41. The limitations of claim 41 are rejected in the analysis of claim 8 above, and the claim is rejected on that basis.

42. The limitations Of claim 42 are rejected in the analysis of claim 30 above, and the claim is rejected on that basis.

43. With respect to claim 49, Iliff teaches the disease object directly invokes another disease object (i.e., migraine disease object directly invokes a next disease object in a ranked list, lines 38-42 in col. 40 and lines17-35 in col. 39).

44. With respect to claim 50, Iliff teaches the disease object directly invokes the symptom object (i.e., migraine object directly invokes ,migraine symptom/questions objects, lines 61-67 in col. 39).

45. With respect to claim 51, Iliff teaches one of the plurality of disease objects directly calls another of the plurality of disease object (i.e., .migraine disease object directly invokes a next disease object in a ranked list, lines 38-42 in col. 40 and lines 17-35 in col. 39).

46. As to Claim 54-55, Iliff teaches “wherein the diagnosis identifies at least one abnormal health state” (col 20, line 1-5, col 36, line 50-63)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**47. *Claims 1, 3-5, 10-13, 15-17,!9, 44-48, 52-53 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iliff (U.S. Patent No. 5,868,669) in view of Gray (U.S. Patent No. 6,149,585).***

48. With respect to claim 1, Iliff teaches “ a method of diagnosing a patient, performed by a server [col 4, line 37-47], Iliff supports computer having input and output, algorithm processor executing the instruction in the computer; computing device corresponds to Iliff's computer;

Iliff teaches retrieving, a plurality of disease objects, processing data indicative of an abnormal health state or disease [col 4, line 37-47],

and each disease object (col 20, line 1-5, col 36, line 50-63), abnormal health state or disease corresponds to Iliff's disease object[s]; associated with a plurality of symptom objects (col 20, line 1-5, col 36, line 50-63) ,

Iliff teaches retrieving, a plurality of symptom objects, each symptom object processing data indicative of a patient sign, complaint, finding, or test result ( col 39, line 35-60, i.e., diagnoses and symptoms, each diagnosis associated with symptoms in

MDATA system, lines 24-35 in col. 12, lines 38-45 in col. 21, and line 24 in Col. 35 thru line 49 in col. 42, the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object);

Iliff teaches “associating, a disease object with at least one symptom object” (col 20, line 1-5, col 36, line 50-63);

Iliff teaches assigning , a weight for each symptom object (i.e., weighted symptom questions, lines 24-34 in col. 60, lines 45-48 in col. 61, and lines. 28- 39 in col. 62). Iliff teaches alternative symptoms objects for a particular preferred symptom object are selected from a set of archived symptoms objects that are available for reuse (i.e., symptoms of headache, lines 6-29 in col. 13, fig. 6, lines 36-57 in col. 39, and lines 7-32 in col. 40).

Iliff teaches ‘using one of the archived symptom objects in conjunction with a plurality of disease objects” (archived symptom objects related to symptoms of headache for example as detailed in line 6-29, in col 13, fig 6, lines 36-52 in col. 39, further Iliff also specifically supports medical history objects database is part of of MDATA system, typically history object database contains medical conditions pointer into the past medical history col 23, line 26-28, line 46-50)

‘receiving, via interactive dialogue between a user and the server, a patient symptom input” (Iliff: col 5, line 36-45; Gray: fig 19-22A, col 9, line 42-55), Iliff specifically teaches user interface allows asking “questions”, and “receiving answers” corresponds to interactive dialogue between users and computing device; further prior art of reference Gray also specifically supports graphical user interface allows to select

required information particularly related to patient physical examination data user selecting “signs & Symptoms questions and answers;

Iliff teaches associating the patient symptom input with at least one symptom object (col 25, line 64-67, col 26, line 1-13)

Iliff teaches, selecting at least one disease object applicable to a patient (lines 53-60 in col. 39); based on at least one of the preferred symptom object (fig 1, fig 3-4) or the alternative symptom object(i.e., the MDATA system concludes that migraine is the most likely cause of the patient's headache, (i.e., symptoms of headache, lines 6-29 in col. 13, fig. 6, lines 36-57 in col. 39, and lines 7-32 in col. 40 );

Iliff teaches invoking, (fig 1, fig 3-4), a preferred symptom object or one of the related alternative symptom objects for the, (fig 1, fig 3-4), selected disease object so as to determine a diagnosis of a patient based on the object invocation (i.e., migraine object directly invokes migraine symptom/questions objects, lines 61-67 in col. 39);

Iliff teaches assign a new name for a symptom object that is reused (col 12, line 32-35, col 21, line 46-51,col 22, line 50-55, col 23, line 288-33), Iliff specifically teaches defining data structure of medical history objects defining unique codes that are reused in processing past and present medical history database; further it is noted that Iliff strongly supports “new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35)

Iliff and Gray teaches “outputting, a diagnosis based at least one of the invoking or selecting (Iliff: fig 1,3-4col 5, line 36-38; Gray: col 1, line 57-67col 5, line 61-64), Iliff,

and Gray both supports input and out devices particularly graphical user interface allows users to get return response to display the list;

“wherein each object comprises an encapsulated combination of data and processes that manipulate the data” (MDATA system supports object oriented language such as C++ related to patient’s medical records and/objects, further, encapsulation is the process of combining data and functions into a single unit called class is integral part of II C++ programming because IIiff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67) .

It is however, noted that IIiff does not explicitly disclose a preferred weight and an alternative weight. However, Gray discloses a plurality of disease associated with a plurality of symptoms in a medical diagnostic enhancement system (lines 7-24 in col. 6 and line 23 in col. 2 thru line 41 in col. 3). Gray also discloses assigning a weight for each symptom, wherein a particular disease includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, wherein the alternative symptoms are selected from a set of symptoms (lines 25-48 in col. 6).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of applicant’s invention to incorporate diagnostic enhancement tasks particularly patient data for possible diagnoses of Gray into computerized medical diagnostic particularly user’s changing condition over time of IIiff because both IIiff, Gray specifically directed to medical diagnostic system [IIiff: Abstract; Gray: Abstract], particularly in a object oriented environment [IIiff: col 8, line 46-55; Gray: col 3, line 10-

16] and they both are from same field of endeavor; Because both Iliff and Gray teach medical diagnostic and treatment advice, it would have been obvious to one of the ordinary skill in the art at the time of applicant's invention to substitute and/or modify one method for the other to achieve the predictable result of extracting specific diagnoses and symptom conditions, further able to present an accurate diagnosis to the patient to treat condition[s] [Gray: Abstract, col 4, line 31-39]

49. Claim 2 (CANCELLED)

50. With respect to claim 3, Iliff teaches the set of archived symptom objects is stored in a database (fig. 1, fig. 3, and fig. 6).

51. With respect to claim 4, Iliff teaches accessing the set of archived symptom objects stored in the database via a global computer network (fig. 1).

52. With respect to claim 5, Iliff teaches each symptom object has underlying objects used to establish a symptom (i.e., a node map, lines 1-7 in col. 15), wherein the objects are arranged in a hierarchical relationship (i.e., a directed graph of a node map, line 64 in col. 14 thru line 24 in col. 15).

53. With respect to claim 10, Iliff discloses the claimed subject matter as discussed above. Iliff further teaches one or more alternative symptoms of a preferred symptom

(i.e., symptoms of headache, lines 36-57 in col. 39). Iliff does not explicitly disclose a preferred weight and an alternative weight. However, Gray discloses a plurality of disease associated with a plurality of symptoms in a medical diagnostic enhancement system (lines 7-24 in col. 6 and line 23 in col. 2 thru line 41 in col. 3). Gray also discloses assigning a weight for each symptom, wherein a particular disease includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms (lines 25-48 in col. 6). Therefore, based on Iliff in view of Gray, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of Gray to the system of Iliff in order to present an accurate diagnosis.

54. With respect to claim 11, Iliff teaches executing, a plurality of disease objects, processing data indicative of an abnormal health state or disease and each disease object (col 20, line 1-5, col 36, line 50-63), abnormal health state or disease corresponds to Iliff's disease object[s]; associated with a plurality of symptom objects , each symptom object processing data indicative of a patient sign, complaint, finding, or test result ( col 39, line 35-60, i.e., diagnoses and symptoms, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12, lines 38-45 in col. 21, and line 24 in Col. 35 thru line 49 in col. 42, the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object);

Iliff teaches receiving, via interactive dialogue between a user and the server, a patient symptom input (Iliff: col 5, line 36-45; Gray: fig 19-22A, col 9, line 42-55), Iliff specifically teaches user interface allows asking “questions”, and “receiving answers” corresponds to interactive dialogue between users and computing device; further prior art of reference Gray also specifically supports graphical user interface allows to select required information particularly related to patient physical examination data user selecting “signs & Symptoms questions and answers;

Iliff teaches associating the patient symptom input with at least one symptom object (col 25, line 64-67, col 26, line 1-13)

Iliff teaches assigning , (col 4, line 37-47, fig 1) a weight for one or more symptom (i.e., weighted symptom questions, lines 24-34 in col. 60, lines 45-48 in col. 61, and lines 28-39 in col. 62). Iliff teaches alternative symptoms for a particular preferred symptom are selected from a set of archived symptoms objects that are available for reuse (lines 6-29 in col. 13, fig. 6, lines 36-57 in col. 39, and lines 7-32 in col. 40). Iliff teaches a. particular preferred symptom has one or more related alternative symptoms that represent different approaches for eliciting further diagnostic information related to a same patient health condition (i.e., symptoms of headache, lines 36-57 in col. 39, lines 36-57 in col. 39, and lines 7-32 in col. 40).

Iliff teaches ‘using one of the archived symptom objects in conjunction with a plurality of disease objects” (archived symptom objects related to symptoms of headache for example as detailed in line 6-29, in col 13, fig 6,(lines 36-52 in col. 39, further Iliff also specifically supports medical history objects database is part of of

MADATA system, typically history object database contains medical conditions pointer into the past medical history col 23, line 26-28, line 46-50);

Iliff teaches assign a new name for a symptom object that is reused (col 12, line 32-35, col 21, line 46-51, col 22, line 50-55, col 23, line 288-33), Iliff specifically teaches defining data structure of medical history objects defining unique codes that are reused in processing past and present medical history database; further it is noted that Iliff strongly supports “new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35)

Iliff teaches selecting, , (fig 1, fig 3-4), from the plurality of disease objects, a disease object applicable to a patient (i.e., the MADATA system concludes that migraine is the most likely cause of the patient's headache, lines 53-60 in col. 39);

Iliff teaches invoking, (fig 1, fig 3-4), a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation (i.e., migraine object directly invokes migraine symptom/questions objects, lines 61-67 in col. 39).

Iliff, and Gray teaches ‘outputting, a diagnosis based at least one of the invoking or selecting (Iliff: fig 1,3-4 col 5, line 36-38; Gray: col 1, line 57-67 col 5, line 61-64), Iliff, and Gray both supports input and out devices particularly graphical user interface allows users to get return response to display the list;

It is however, noted that Iliff does not explicitly disclose a preferred weight and an alternative weight. On the other hand, Gray discloses a plurality of disease associated with a plurality of symptoms in a medical diagnostic enhancement system (lines 7-24 in

col. 6 and line 23 in col. 2 thru line 41 in col. 3). Gray also discloses assigning a weight for each symptom, wherein a particular disease includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of symptoms (lines 25-48 in col. 6).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of applicant's invention to incorporate diagnostic enhancement tasks particularly patient data for possible diagnoses of Gray into computerized medical diagnostic particularly user's changing condition over time of Iliff because both Iliff, Gray specifically directed to medical diagnostic system [Iliff: Abstract; Gray: Abstract], particularly in a object oriented environment [Iliff: col 8, line 46-55; Gray: col 3, line 10-16] and they both are from same field of endeavor; Because both Iliff and Gray teach medical diagnostic and treatment advice, it would have been obvious to one of the ordinary skill in the art at the time of applicant's invention to substitute and/or modify one method for the other to achieve the predictable result of extracting specific diagnosis's and symptom conditions, further able to present an accurate diagnosis to the patient to treat condition[s] [Gray: Abstract, col 4, line 31-39]

55. With respect to claim 12, Gray further teaches weights can be different (lines 25- 48 in col. 6). Therefore, the limitations of claim 12 are rejected in the analysis of claim 11 above, and the claim is rejected on that basis.

56. With respect to claim 13, Gray further teaches weights can be different (lines 25-48 in col. 6). Therefore, the limitations of claim 13 are rejected in the analysis of claim 12 above, and the claim is rejected on that basis.

57. Claim 14 (CANCELLED)

58. With respect to claim 15, Iliff teaches the set of archived symptom objects is stored in a database (fig. 1, fig. 3, and fig. 6).

59. With respect to claim 16, Iliff teaches accessing the set of archived symptom objects stored in the database via a global computer network (fig. 1).

60. With respect to claim 17, Iliff teaches each symptom object has underlying objects used to establish a symptom (i.e., a node map, lines 1-7 in col. 15).

61. Claim 18 (CANCELLED)

62. With respect to claim 19, Iliff teaches a particular preferred symptom is selected when a particular diagnosis is likely (lines 36-52 in col. 39).

63. The limitations of claim 44 are rejected in the analysis of claim 19 above, and the claim is rejected on that basis.

64. With respect to claim 45, Iliff teaches a particular disease is associated with a plurality of disease objects corresponding to different phases of the particular disease (i.e., stages of illness, lines 31-42 in col. 1).

65. With respect to claim 46, Iliff teaches a particular disease is associated with a plurality of disease objects corresponding to different populations for the particular disease (lines 22-28 in col. 47).

66. With respect to claim 47, Iliff teaches a particular disease object is representative of a plurality of related diseases that share common symptoms (i.e., meningitis and brain tumor shares headache, lines 11-26 in col. 41).

67. With respect to claim 48, Iliff teaches the selected disease object directly invokes another of the plurality of disease objects (i.e., migraine disease object directly invokes a next disease object in a ranked list, lines 38-42 in col. 40 and lines 17-35 in col. 39).

68. With respect to claim 52, Iliff teaches the selected disease object directly invokes another of the plurality of disease objects (i.e., migraine disease object directly invokes a next disease object in a ranked list, lines 38-42 in col. 40 and lines 17-35 in col. 39).

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69. As to Claim 53,56, Iliff teaches "wherein the diagnosis identifies at least one abnormal health state" (col 20, line 1-5, col 36, line 50-63)

### Response to Argument

70. Applicant's arguments [page 15-24] filed 5/23/2012 with respect to claims **1,3-15,15-17,19-27,29-38,40-42,44-56** have been fully considered but they are not persuasive, for examiners' response, see discussion below:

**NOTE:** Examiner also cites and incorporates "**Board of Patent Appeals and Interferences" decision** mailed on 3/23/2010

a) At page 17-20, claim 6 and 9, applicant argues present application claims "

The Patent Office has failed to show how the references, either alone or in combination, teach or suggest all the claim limitations. The Patent Office has also failed to show an explicit reason, suggestion, or motivation to modify the disclosure of the '669 Patent, Gray, Braun or Branson.

The references do not teach or suggest Claim 6. Claim 6 recites:

An object based automated diagnostic system comprising: a server; and non-transitory computer executable program code, configured to execute on the server, wherein the server is configured to:

execute a plurality of diagnostic objects which interact to receive input from a user and, as a result of said interaction, determine a diagnosis of a patient, wherein the objects include at least two diagnostic objects comprising:

a disease object processing data indicative of an abnormal health state or disease, a symptom object processing data indicative of a patient sign, complaint, finding, or test result, a valuator object processing data indicative of a value of a symptom of the patient, a question object processing data indicative of questions to ask the patient specific to a specific symptom of the patient, a node object processing data indicative of a single well-defined question to the patient; and

a candidates object processing data indicative of candidate diseases for diagnosis of the patient, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects; and assign a new name for a symptom object that is reused, wherein at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation,

wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data

For all of the reasons set forth in Applicant's responses to previous Office Actions, the Patent Office has not shown how the references teach or suggest Claim 6. Furthermore, Claim 6 includes the feature:

- "assign a new name for a symptom object that is reused ....

"

In addition, the Patent Office stated:

Iliff and Gray disclose the claimed subject

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matter.., except assigning a new name for a symptom object that is reused. However, Branson teaches assigning a new name for a symptom object that is reused (fig. 16 and lines 17-39 of co[. 20) in order to provide customization and extension of an object (lines 21-57 in co[. 4).

The Patent Office appears to be characterizing "customization and extension of certain aspects of the 00 solution" (Branson, coL4,[L46-47) as "assigning a new name for a symptom object ...." (Present invention). The Patent Office has not provided any support for such characterization. Specifically, Branson teaches "frameworks provide an 00 programming solution that can be customized and extended to address individualized requirements that change over time." (Branson, co[.4,[.50-52). "The extensible function.., is that part of the framework that has been explicitly designed to be customized and extended by the framework purchaser as part of its implementation." (Branson, coL4,[L34-39). The Patent Office has not shown than Branson teaches a "server... assigning a new name for a symptom object" (Present invention) because Branson teaches "the framework.., customized and extended by the framework purchaser ....(Emphasis added). Furthermore, in regards to FIG. 16, Branson teaches "the class Condition is shown with an 'inheritance' relationship of classes called Dizziness, Fever, Numbness, and Rash[.]" and "sub-type classes of the Rash condition class that are called RasyType1, RashTpe2, and RashType3." (Branson, co[.20,[.17-21). Nowhere does Branson teach "assigning a new name" and in fact the names used appear to be static throughout.

On that basis, the Patent Office has not established a *prima facie* case for anticipation as to C[aim 6. C[aims 7-8, 20-27, 29-30, 49-50 and 54 depend from C[aim 6. Dependent C[aims contain a[[ of the [imitations of the C[aims from which they depend. Therefore, the Patent Office has not established that the cited references anticipate, teach or suggest C[aims 7-8, 20-27, 29-30, 49- 50 and 54. Furthermore, Applicant continues to assert a[[ of the arguments previous[y presented. Applicant respectfully requests allowance of the C[aims.

ii. The references do not teach or suggest Claim 9 Claim 9 recites

An object based automated diagnostic system comprising: a server; and non-transitory computer executable program code, configured to execute on the server, wherein the server is configured to:

execute a plurality of diagnostic objects which interact to receive input from a user and, as a result of said interaction, determine a diagnosis of a patient, wherein the diagnostic objects include at [east a plurality of disease objects, each disease object processing data indicative of an abnormal health state or disease;

execute a plurality of symptom objects, each symptom object processing data indicative of a patient sign, complaint, finding, or test result, and a plurality of valuator objects, each valuator object processing data indicative of a value of a symptom of the patient; and

assign a new name for a symptom object that is reused,

wherein at [east some of the diagnostic objects perform their own tasks and directly ca[[ upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient, and

wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data.

For all of the reasons set forth in Applicant's responses to previous Office Actions, the Patent Office has not shown how the references teach or suggest Claim 9. Furthermore, Claim 9 includes the feature:

- "assign a new name for a symptom object that is reused ...."

In addition, the Patent Office stated:

Illif and Gray disclose the claimed subject matter.., except assigning a new name for a symptom object

that is reused. However, Branson teaches assigning a new name for a symptom object that is reused (fig. 16 and lines 17-39 of co[. 20) in order to provide customization and extension of an object (lines 21-57 in co[. 4).

The Patent Office appears to be characterizing "customization and extension of certain aspects of the 00 solution" (Branson, coL4,[L46-47) as

"assigning a new name for a symptom object ...." (Present invention). The Patent Office has not provided any support for such characterization. Specifically, Branson teaches "frameworks provide an 00 programming solution that can be customized and extended to address individualized requirements that change over time." (Branson, co[.4,[.50-52). "The extensib[e function..., is that part of the framework that has been explicitly designed to be customized and extended by the framework purchaser as part of its implementation." (Branson, coL4,[L34-39). The Patent Office has not shown than Branson teaches a "server... assigning a new name for a symptom object" (Present invention) because Branson teaches "the framework.., customized and extended by the framework purchaser .... "

(Emphasis added). Furthermore, in regards to FIG. 16, Branson teaches "the class Condition is shown with an 'inheritance' relationship of classes ca[led Dizziness, Fever, Numbness, and Rash[,]" and "sub-type classes of the Rash condition class that are ca[led RashType1, RashTpe2, and RashType3."

(Branson, co[.20,[.17-21). Nowhere does Branson teach "assigning a new name" and in fact the names used appear to be static throughout.

On that basis, the Patent Office has not established a *prima facie* case for anticipation as to Claim 6. Claims 10, 31-38, 40-42, 51 and 55 depend from Claim 6. Dependent Claims contain a[[ of the [imitations of the Claims from which they depend. Therefore, the Patent Office has not established that the cited references anticipate, teach or suggest Claims 10, 31-38, 40-42, 51 and 55.

### **35 U.S.C. § 103(a)**

Under 35 USC § 103, by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*,

383 U.S. 1, 17-18 (1966). See also KSR, 127 S. Ct. 1727, 1734 ("While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.")

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Leapfrog Enter., Inc. v. Fisher-Price, Inc., 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting KSR Int'l v. Teleflex, Inc., 127 S. Ct. 1727, 1739(2007)). "One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." KSR, 127 S. Ct. at 1742.

Discussing the obviousness of claimed combinations of elements of prior art, KSR explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [v. AG Pro, Inc., 425 U.S. 273 (1976)] and *Anderson's-Black Rock*[, Inc. v. *Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative--a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 127 S. Ct. at 1740. Where the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or

the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that there was "an apparent reason to combine the known elements in the fashion claimed." KSR, 127 S. Ct. at 1741. Such a showing requires "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, 127 S. Ct. at 1741 (quoting *In re Kahn*, 441 F.3d 977, 987(Fed. Cir. 2006)).

The reasoning given as support for the conclusion of obviousness can be based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. KSR, 127 S. Ct. at 1740-41. See also *Dystar Textilfarben GmbHv. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2007).

Examiner noted that court has recently reaffirmed that:

[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal-and even common-sensical-we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him capable of combining the prior art references.

*Leapfrog*, 485 F.3d at 1162 (holding it "obvious to combine the Bevan device with

the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost").

Also, a reference may suggest a solution to a problem it was not designed to solve and thus does not discuss. KSR, 127 S. Ct. at 1742 ("Common sense teaches..., that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle .....A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

The prior art relied on to prove obviousness must be analogous art. As explained in Kahn,

the 'analogous-art' test-has long been part of the primary Graham analysis articulated by the Supreme Court. See *Dann* [v. *Johnston*,] 425 U.S. [219,] 227-29 (1976), *Graham*, 383 U.S. at 35. The analogous-art test requires that the Board show that a reference is either in the field of the applicant's endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992). References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* ("[I]t is necessary to consider 'the reality of the circumstances,'-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor." (quoting *In re Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979))). *Kahn*, 441 F.3d at 986-87. See also *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992) ("[a] reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem.").

In view of KSR's holding that "any need or problem known in the field of

endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed," 127 S. Ct. at 1742 (emphasis added), it is clear that the second part of the analogous-art test as stated in *Clay*, *supra*, must be expanded to require a determination of whether the reference, even though it may be in a different field from that of the inventor's endeavor, is one which, because of the matter with which it deals, logically would have commended itself to an artisan's (not necessarily the inventor's) attention in considering any need or problem known in the field of endeavor. Furthermore, although under KSR it is not always necessary to identify a known need or problem as a motivation for modifying or combining the prior art, it is nevertheless always necessary that the prior art relied on to prove obviousness be analogous. See KSR, 127 S. Ct. at 1739. ("The Court [in *United States v. Adams*, 383 U.S. 39, 40 (1966)] recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.") (emphasis added). See also *Sakraida*, 425 U.S. 273,280 (1976)

As to the above argument [a]:

**NOTE:** Examiner hereby incorporating previous office action arguments [mailed on 9/14/2001, 5/23/2011, 12/7/2010, Board decision mailed on 3/23/2010.

As amended claims 6,9 [5/23/2012], prior art of reference Iliff supports computer hardware having input and output, algorithm processor executing the instruction in the computer; computing device corresponds to Iliff's computer , further prior art Iliff strongly supports both input and output device col 4, line [62-67, col 5, line 36-45]

The claims 6, 9 in the instant application are directed to a “automated computer-implemented diagnostic system”[ claim 6]; “automated diagnostic system” [claim 9] is equivalent to computerized knowledge-based medical diagnostic system [Iliff: Abstract, line 1-2].

The prior art of the reference, Iliff specifically teaches **MDATA** system that supports object oriented language such as C++ related to patient's medical records and/objects, further combining data and functions into a single unit called class is integral part of C++ programming because Iliff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67 reads on the claim 6 “limitation” plurality of diagnostic objects which interact, as executed by the computing device, to receive input from a user and, as a result of said interaction [Iliff: col 4, line 62-67] determine a diagnosis of a patient ...”, further it is noted that instant specification **MDATA** system [spec page 48-49, fig 1, fig 35] does exactly same as prior art of Iliff **MDATA system**.

The prior art Iliff also strongly teaches creating various catalog objects related to medical algorithm in the patient list for all patients particularly identifying different set of "problems" or "complaint" for example "headache" that requires immediate attention, including "very serious" that requires medical attention (col 20, line 1-5, col 36, line 50-63) reads on "a disease object processing data indicative of an abnormal health state or disease", also identical to instant specification "headache matrix" [fig 27, page 73].

It is further noted that prior art Iliff specifically teaches (MDATA system processing information related to patient's diagnostic or symptom screening for example as detailed in col 39, line 35-60 reads on "a symptom object, processing data indicative of a patient sign, complaint, finding or test results; further, Iliff teaches MDATA system specifically processing specific questions related to specific headaches for example "migraine screening" (col 30, line 35-60, col 40, line 7-12) reads on "processing data indicative of questions to ask the patient specific to a specific symptom of the patient". As noted above, MDATA system is exactly same as instant specification MDATA system as detailed in fig 1, fig 35.

Iliff teaches [as amended 5/23/2012] "assign a new name for a symptom object that is reused" (col 12, line 32-35, col 21, line 46-51, col 22, line 50-55, col 23, line 288-33), Iliff specifically teaches defining data structure of medical history objects defining unique codes that are reused in processing past and present medical history database, further it is noted that Iliff strongly supports "new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35).

The prior art of Braun et al. is directed to medical data collection from multiple sites, automated analysis of data, particularly in real-time data collection environment [Braun: Abstract], prior art Braun also strongly supports "object-oriented" data interface library, defining data collection and input nodes logically available for processing sources of data [col 13, line 1-13, line 41-46] and overall, Braun strongly teaches automated medical data collection, analysis, viewing and diagnosis [col 3, line 15-35].

On the other hand, Braun et al. teaches "wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data" (Abstract, col 3, line 15-19, col 4, line 32-45, col 11, line 14-31), Braun directed to medical diagnosis system specifically real-time data collection, automated data analysis, data encoding, viewing and like i.e. supporting multiple functionalities, further allows data collection, encapsulation as detailed in col 11, line 14-31.

Therefore, based on prior art Iliff in view of Braun et al., , it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of medical diagnosis data collection, analysis into the system of Iliff's medical diagnostic and treatment system in order to maintain the integrity of the overall data collection, encoding, and analysis (Braun: Abstract), further allows supporting "distributed collection including remote monitoring application (col 12, line 35-38), furthermore allows users of Iliff to added programmed functionality which initiates new data collection or output, monitors data streams as new data arrives, produces new views of the data and like (Braun: col 11, line 53-57)

Examiner applies above arguments to claim 9 and their depend claims.

Therefore, Applicant's remarks are deemed not to be persuasive, and claims 6-9, 20-27, 29-38, 40-42, and 49-51, and 54-55 stand rejected under 35 USC 103(a) unpatentable over Iliff in view of Braun et al.

**b) At page 20-24, claims 1, claim 11, applicant argues the following:**

he references do not teach or suggest Claim 1  
Claim 1 recites:

A method of diagnosing a patient, performed by a server, through the reuse of medical script objects used in the automated diagnosis or management of a medical condition, the method comprising: retrieving a plurality of disease objects, each disease object processing data indicative of an abnormal health state or disease;

retrieving a plurality of symptom objects, each symptom object processing data indicative of at [east a patient sign, complaint, finding, or test result;  
associating a disease object with at [east one symptom object;

assigning a weight for each symptom object, wherein a particular disease object includes a preferred weight for one or more preferred symptom objects and an alternative weight for one or more related alternative symptom objects, wherein the preferred symptom objects and the alternative symptom objects for a particular preferred symptom object are selected from a set of archived symptom objects that are available for reuse;

using one of the archived symptom objects in conjunction with a plurality of disease objects; receiving, via interactive dialogue between a user and the server a patient symptom input; associating the patient symptom input with at [east one symptom object;

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selecting at [east one disease object applicable to a patient based on at [east one of the preferred symptom object or the alternative symptom object;

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to determine a diagnosis of a patient based on the object invocation;

assigning a new name for a symptom object that is reused; and

outputting a diagnosis based at [east one of the invoking or selecting,

wherein each object comprises an encapsulated combination of data and processes that manipulate the data.

For all of the reasons set forth in Applicant's responses to previous Office Actions, the Patent Office has not shown how the references teach or suggest Claim 1. Furthermore, Claim 1 includes the feature:

- "assigning a new name for a symptom object that is reused ...."

For all of the reasons set forth in Applicant's responses to the previous Office Actions, the Patent Office has not shown how the '669 Patent or Gray, either alone or in combination, teach or suggest Claim 1. Applicant continues to assert a[] of the arguments previously presented.

In addition, the Patent Office stated:

Illif and Gray disclose the claimed subject matter..., except assigning a new name for a symptom object that is reused. However, Branson teaches assigning a new name for a symptom object that is reused (fig. 16 and lines 17-39 of co[. 20) in order to provide customization and extension of an object (lines 21-57 in co[. 4).

The Patent Office appears to be characterizing "customization and extension of certain aspects of the 00 solution" (Branson, coL4,[L46-47) as

"assigning a new name for a symptom object .... " (Present invention). The Patent Office has not provided any support for such characterization. Specifically, Branson teaches "frameworks provide an 00 programming solution that can be customized and extended to address individualized requirements that change over time." (Branson, co[.4,][.50-52). "The extensible[e function..., is that part of the framework that has been explicitly designed to be customized and extended by the framework purchaser as part of its implementation." (Branson, coL4,[L34-39). The Patent Office has not shown han Branson teaches a "server... assigning a new name for a symptom object" (Present invention) because Branson teaches "the framework..., customized and extended by the framework purchaser ...."

(Emphasis added). Furthermore, in regards to FIG. 16, Branson teaches "the class Condition is shown with an 'inheritance' relationship of classes called Dizziness, Fever, Numbness, and Rash[,] and "sub-type classes of the Rash condition class that are called RasyTypel, RashTpe2, and RashType3." (Branson, co[.20,][.17-21). Nowhere does Branson teach "assigning a new name" and in fact the names used appear to be static throughout.

On that basis, the Patent Office has not established a prima facie case for obviousness as to Claim 1. Claims 3-5, 19, 45-48 and 53 depend from Claim 1. Dependent Claims contain a[] of the [imitations of the Claims from which they depend. Therefore, the Patent Office has not established a prim facie case for obviousness as to Claims 3-5, 19, 45-48 and 53. Furthermore, Applicant continues to assert all of the arguments previously presented. Applicant respectfully requests allowance of the Claims.

iv. The references do not teach or suggest Claim 1 1

Claim 11 recites:

A method of diagnosing a patient through the reuse of medical script objects performed by a server in the automated diagnosis or management of a medical condition, the method comprising:

executing a plurality of disease objects, each disease object processing data indicative of an abnormal health state or disease and each disease object associated with a plurality of symptom objects, each symptom object processing data indicative of a patient sign, complaint, finding, or test result;

receiving, via interactive dialogue between a user and the server, a patient symptom input; associating the patient symptom input with at [east one symptom object;

assigning a weight for one or more symptoms, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected

from a set of archived symptom objects that are available for reuse, and wherein the particular preferred symptom has one or more related alternative symptoms that represent different approaches for eliciting further diagnostic information related to a same patient health condition;

using one of the archived symptom objects in conjunction with a plurality of disease objects;

assigning a new name for a symptom object that is reused;

selecting from the plurality of disease objects, a disease object applicable to a patient;

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation; and  
outputting a diagnosis based at [east one of the invoking or selecting.

For all of the reasons set forth in Applicant's response to the previous Office Action, the Patent Office has not shown how the '669 Patent or Gray, either alone or in combination, teach or suggest Claim 11. Furthermore, Claim 11 includes the feature:

- "assigning a new name for a symptom object that is reused ...."

In addition, the Patent Office stated:

Iliff and Gray disclose the claimed subject matter..., except assigning a new name for a symptom object that is reused. However, Branson teaches assigning a new name for a symptom object that is reused (fig. 16 and lines 17-39 of col. 20) in order to provide customization and extension of an object (lines 21-57 in col. 4).

The Patent Office appears to be characterizing "customization and extension of certain aspects of the 00 solution" (Branson, col 4, [L46-47]) as "assigning a new name for a symptom object ...." (Present invention). The Patent Office has not provided any support for such characterization. Specifically, Branson teaches "frameworks provide an 00 programming solution that can be customized and extended to address individualized requirements

As to the above argument [b],

In this case, prior art of reference Iliff is directed to computerized medical diagnostic system", particularly, "MDATA" system defining various objects related to "medical diagnostic and treatment", further MDATA system specifically supports user interaction specifically between doctor and patient [Abstract, col 4, line 5-11], further Iliff also specifically teaches "MDATA" software written in Microsoft C/C++ version ie. using "structured programming techniques" supported by algorithm process [col 8, line 46-50]. It is also noted that Iliff strongly supports and developed based on "international classification of Diseases codes" [col 13, line 6-8], further MDAtA system's algorithms execution based on "medical history", "patient's responses", particularly supports user

interaction question and answer types with multiple-choice questions [col 14, line 57-67]

As stated above, prior art Iliff specifically directed to diagnoses and symptoms, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12, lines 38-45 in col. 21, and line 24 in Col. 35 thru line 49 in col. 42, the MDATA system is written in object-oriented program language, such as C++, lines 7-16 in col. 14, therefore teaching object. Iliff also teaches MDATA system supports object oriented language such as C++ related to patient's medical records and/objects, further combining data and functions into a single unit called class is integral part of II C++ programming because Iliff specifically teaches MDATA system including defining various software modules as detailed in col 8, line 49-67) . As noted above, MDATA system is exactly same as instant specification MDATA system as detailed in fig 1, fig 35.

Prior art of Iliff teaches archived symptom objects related to symptoms of headache for example as detailed in line 6-29, in col 13, fig 6, lines 36-52 in col. 39, further Iliff also specifically supports medical history objects database is part of of MDATA system, typically history object database contains medical conditions pointer into the past medical history col 23, line 26-28, line 46-50 reads on the limitation "using one of the archived symptom objects in conjunction with a plurality of disease objects".

Prior art of Iliff teaches [as amended 5/23/2012] "assign a new name for a symptom object that us reused" (col 12, line 32-35, col 21, line 46-51,col 22, line 50-55, col 23, line 288-33), Iliff specifically teaches defining data structure of medical history

objects defining unique codes that are reused in processing past and present medical history database, further it is noted that Iliff strongly supports “new diseases are added to the new diseases sets of diagnostic questions for disease specific (col 12, line 32-35).

In this case prior art of reference Gray is directed to “medical diagnostic system”, more specifically, processing, recommending diagnostic tasks based on possible diagnostic task [Abstract], Gray also strongly teaches “executing diagnostic enhancement program for example as detailed in fig 2, element 142. It is also noted that Gray supports user interface particularly presenting “medical problem” such as patient data including “symptoms”, outputting possible diagnoses recommendations for example as detailed in col 3, line 43-65, col 9, line 42-55]

It is however, noted that Iliff does not explicitly disclose a preferred weight and an alternative weight. On the other hand, Gray discloses a plurality of disease associated with a plurality of symptoms in a medical diagnostic enhancement system (lines 7-24 in col. 6 and line 23 in col. 2 thru line 41 in col. 3). Gray also discloses assigning a weight for each symptom, wherein a particular disease includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of symptoms (lines 25-48 in col. 6).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of applicant’s invention to incorporate diagnostic enhancement tasks particularly

patient data for possible diagnoses of Gray into computerized medical diagnostic particularly user's changing condition over time of Iliff because both Iliff, Gray specifically directed to medical diagnostic system [Iliff: Abstract; Gray: Abstract], particularly in a object oriented environment [Iliff: col 8, line 46-55; Gray: col 3, line 10-16] and they both are from same field of endeavor; Because both Iliff and Gray teach medical diagnostic and treatment advice, it would have been obvious to one of the ordinary skill in the art at the time of applicant's invention to substitute and/or modify one method for the other to achieve the predictable result of extracting specific diagnosis's and symptom conditions, further able to present an accurate diagnosis to the patient to treat condition[s] [Gray: Abstract, col 4, line 31-39]

Therefore, Applicant's remarks are deemed not to be persuasive, and claims 1, 3-5, 10-13, 15-19, 43-48, 52-53 and 56 stand rejected under 35 USC 103(a) as being unpatentable over Iliff in view of Gray

### ***Conclusion***

#### **The prior art made of record**

- a. US Patent. No. 5868669
- b. US Patent.No. 6149585
- c. US Patent.No. 6050940

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

SEE MPEP 2141.02 [R-5] VI. PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS: A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) In re Fulton, 391 F.3d 1195, 1201,73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

>See also MPEP §2123.

In the case of amending the Claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

The prior art made of record, listed on form PTO-892, and not relied upon, if any, is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srirama Channavajjala whose telephone number is 571-272-4108. The examiner can normally be reached on Monday-Friday from 8:00 AM to 5:30 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim, Charles, can be reached on (571) 272-7421. The fax phone numbers for the organization where the application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

/Srirama Channavajjala/  
Primary Examiner, Art Unit 2157.